

Remarks/Arguments:

Claims 11 and 20 have been amended. Claims 23 and 24 have been added. No new matter is introduced herein. Claims 11, 12, 18 and 20-24 are pending.

Claims 11 and 20 have been amended to clarify that the external force that acts upon an object is exclusive of a grasp force by a robot grasping the object. In addition, claims 11 and 20 have been amended to determine if the change in external force in a direction is 1) caused by a person taking away the object and due to a first condition which is delivery of the grasped object or 2) caused by a force resulting from an other cause and due to a second condition which is a non-delivery of the grasped object. Claim 20 has also been amended to recite means for determining a direction of an external force. No new matter is introduced herein. Basis for the amendments can be found, for example, at page 12, line 18 - page 13, line 20.

Claims 11, 12, 18 and 20-22 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In addition, claims 11, 12, 18 and 20-22 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, it is asserted that the phrase "determining a direction of an external force" is not described in the subject specification. Applicants respectfully disagree. Basis for the feature of determining a direction of an external force can be found, for example, at page 8, line 25 - page 11, line 7; Fig. 2; and, in particular, equation 8 and the following paragraph on page 10 of the subject specification. Page 10 specifically describes a component F which provides a determination of a direction of an external force. As discussed above, claims 11 and 20 have also been amended to clarify that the external force is exclusive of a grasp force by a robot grasping the object. Accordingly, sufficient

support is provided by the specification for the feature of determining a direction of an external force, as recited in claims 11 and 20. Thus, Applicants respectfully request that the rejection of claims 11, 12, 18 and 20-22 under 35 U.S.C. § 112, first paragraph be withdrawn.

Claims 11 and 20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Graham (U.S. 5,200,679). Claims 12 and 21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Graham in view of Andeen et al. (U.S. 4,637,736) or Hill et al. (U.S. 3,904,234). Claims 18 and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Graham in view of Chao (U.S. 5,847,529) or Hollbrooks (U.S. 6,692,049). It is respectfully submitted, however, that these claims are patentable over the cited art for the reasons set forth below.

Claim 11, as amended, includes features neither disclosed nor suggested by the cited art, namely:

- a) determining a direction of an external force acting upon an object, the external force exclusive of a grasp force by a robot grasping the object;
- b) determining, when a change in the external force in said direction is equal to or greater than a predetermined threshold, if the change in the external force in said direction is i) caused by a person taking away the object and due to a first condition which is a delivery of the grasped object or ii) caused by a force resulting from an other cause and due to a second condition which is a non-delivery of the grasped object (Emphasis Added)

Claim 20 includes a similar recitation.

Graham discloses, in Figs. 1-3, an artificial hand 11, including sensing pad 72 provided on finger 14. Graham discloses, in Figs. 5 and 6 a cylinder 71 that is grasped between sensing pad 72 and phalanx 17. A greater tensile force is applied until a

compressive force detected by sensing pad 72 reaches a predetermined level so that an object is grasped by artificial hand 11 (col. 7, lines 40-65). Graham also describes releasing cylinder 71 from artificial hand 11 (col. 7, lines 66 - col. 8, line 8). Thus, Graham teaches measuring a compressive force exerted on the grasped object by the artificial hand and that the artificial hand is able to increase its tensile force or release the object.

Graham does not disclose or suggest Applicants' claimed features of determining a direction of an external force acting upon an object where the external force is exclusive of a grasp force by a robot grasping the object, as recited by claims 11 and 20 (emphasis added). These features are neither disclosed nor suggested by Graham. Although Graham describes detecting a compressive force exerted on the object by the artificial hand, Graham is silent on determining a direction of an external force that is exclusive of a grasp force by a robot grasping the object.

Because Graham does not disclose or suggest determining a direction of an external force that is exclusive of a grasp force by a robot grasping the object, Graham cannot disclose or suggest Applicants claimed features of determining if a change in the external force in the direction is: 1) caused by a person taking away the object and due to a delivery of the grasped object or 2) caused by a force resulting from an other cost and due to a non-delivery of the grasped object, as recited by claims 11 and 20. Graham is silent on determining a direction of an external force in order to determine whether the external force is caused by a person taking away the grasped object or by a force resulting from an other cause on the grasped object. Thus, Graham does not include all of the features of claims 11 and 20. Accordingly, allowance of claims 11 and 20 is respectfully requested.

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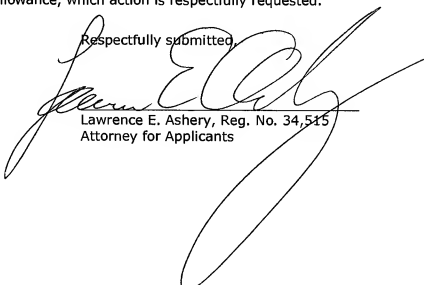
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Claims 12, 18, 21 and 22 include all of the features of respective claims 11 and 20 from which they depend. The remaining cited art do not make up for the deficiencies of Graham because these references, either alone or in combination, do not disclose or suggest 1) determining a direction of an external force that is exclusive of a grasp force by a robot grasping the object and 2) whether a change in the external force is caused by a person taking away the object or by a force resulting from an other cause. Accordingly, claims 12, 18, 21 and 22 are also patentable over the cited art.

Claims 23 and 24 have been added. No new matter is introduced herein. Basis for claims 23 and 24 can be found, for example, at page 11, lines 1-7. Claims 23 and 24 include all of the features of respective claims 11 and 20 from which they depend and are also patentable over the cited art for at least the same reasons as set forth above for claims 11 and 20.

In view of the amendments and remarks set forth above, the above-identified application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,


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